

Influence of processing methods on the physical and mechanical behavior of scaffolds based on PHB.

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Abstract.

The theoretical prediction of the mechanical behavior of fibrous materials for medicine in various environments is of great scientific interest. The deformation mechanisms of biopolymer electrospun fibrous materials differ significantly in dependence on environment condition under loading, namely, liquid, gaseous medium or at their interface. In this paper, the influence of various media on the mechanical behavior of fibrous materials under the tension and bending was examined, and various methods of directed change in physical and mechanical characteristics were considered. Among the methods of directed influence on physical and mechanical behavior, the authors highlighted the most effective methods that did not have a negative effect on the functional properties of medical materials: oxidative stress (ozone treatment), the incorporation of low concentrations of modifying additives (complexes of tetraphenylporphyrin with metals). The various methods of analysis were used for the characterization of the structure and properties, such as dynamic mechanical analysis, optical and acoustic microscopy, differential colorimetry, electronic paramagnetic resonance, Fourier infrared spectroscopy.

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